

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method for performing an optical adjustment on an exposure apparatus which exposes an object with exposure light from a light source, comprising:

generating, from said light source, non-exposure light having a wavelength which is different from that of said exposure light, said non-exposure light including at least one of ultraviolet light and visible light;

adjusting an optical property of an optical system through which said exposure light passes by receiving said non-exposure light from said light source through at least a part of the optical system with a first sensor, said optical system including at least an illumination system which irradiates said exposure light onto an original;

generating said exposure light from said light source, said exposure light being incident on said optical system of which the optical property is adjusted; and

receiving said exposure light through at least a part of said optical system with a second sensor to obtain an optical property of said optical system at the wavelength of said exposure light.

2-11. (Canceled)

12. (Previously Presented) An exposure apparatus which exposes an object with exposure light, comprising:

a light source in which optical components are installed and which generates said exposure light and non-exposure light having a wavelength which is different from that of said exposure light and including at least one of ultraviolet light and visible light;

an optical system disposed on an optical path through which said exposure light passes and including at least an illumination system which irradiates said exposure light onto an original;

a first sensor that receives said non-exposure light from said light source through at least a part of said optical system and output of which is used in adjustment of an optical property of said optical system, said optical property being adjusted based on the output from said first sensor; and

a second sensor that receives said exposure light from said light source through at least a part of said optical system to obtain an optical property of said optical system at the wavelength of said exposure light.

13-16. (Canceled)

17. (Previously Presented) An apparatus according to claim 12, further comprising:

a wavelength selection device disposed between said light source and said optical system to select one of said exposure light and said non-exposure light, emitted from said light source, toward said optical system.

18. (Currently Amended) An exposure apparatus which exposes an object with exposure light, comprising:

an x-ray source that generates x-rays ~~used as~~ said exposure light and also generates second wavelength light having a wavelength which is different from that of said exposure light; and

optical elements that guide said x-rays generated from said x-ray source to said object; and

a light source observation system that forms an image of said x-ray source with said second wavelength light generated from said x-ray source that generates x-rays as said exposure light and passes through said optical elements that guide said x-rays generated from said x-ray source to said object light, ~~having a wavelength which is different from that of said exposure light, generated concurrently with said x-rays from said x-ray source to~~ obtain positional information with respect to said x-ray source and said optical elements, said second wavelength light including one of ultraviolet light and visible light.

19. (Previously Presented) An apparatus according to claim 18, wherein said x-ray source is a laser excitation plasma source that generates said x-rays from a substance by irradiation of a laser beam.

20. (Previously Presented) An apparatus according to claim 18, wherein said light source observation system includes first and second optical systems, which are positioned so as to observe said x-ray source from different directions.

21. (Previously Presented) An apparatus according to claim 18, wherein said light source observation system includes first and second optical systems of which optical axes intersect each other.

22. (Currently Amended) An apparatus according to claim 18, wherein said x-ray source is disposed inside a vacuum chamber, and said light source position observation system provides for observation of an image of said x-ray source formed by said second wavelength light from outside said vacuum chamber.

23. (Currently Amended) A method of adjusting an exposure apparatus having an x-ray source, which exposes an object with exposure light from the x-ray source which passes through predetermined optical elements, comprising:

~~generating, generating x-rays from said x-ray source, light having a wavelength which is different from that of~~ source as said exposure light, light;

generating second wavelength light from said x-ray source with said x-rays,
said second wavelength light having a wavelength which is different from that of said
exposure light and including one of ultraviolet light and visible light; and

~~receiving said generated light from said x-ray source with a light detector to~~
~~obtain positional information with respect to said x-ray source; and~~

adjusting said x-ray source and said predetermined optical elements with
respect to an illumination system which irradiates said exposure light onto an ~~original-based~~
~~on said positional information~~original, by receiving said second wavelength light which is
generated from said x-ray source and which passes through said predetermined optical
elements.

24. (Currently Amended) A method of exposing an object with exposure light
from an x-ray source which passes through predetermined optical elements, comprising:

~~receiving light generated concurrently with said exposure light from said x-ray~~
~~source with a light detector to obtain positional information with respect to said x-ray source,~~
~~the light having a wavelength different from that of said exposure light;~~

adjusting said x-ray source and said predetermined optical elements with
respect to an illumination system which irradiates said exposure light onto an ~~original-based~~
~~on said positional information~~original, by receiving second wavelength light which is
generated from said x-ray source and which passes through said predetermined optical
elements, said second wavelength light having a wavelength which is different from that of
said exposure light, generated from said same x-ray source which generates x-rays used as
said exposure light, said second wavelength light including one of ultraviolet light and visible
light; and

illuminating said original with said exposure light through said illumination
system to expose said object with the illuminated original.

25. (Previously Presented) A method of making an exposure apparatus which exposes an object with exposure light, comprising:

arranging an optical system in an optical path through which said exposure light passes, said optical system including at least an illumination system which irradiates said exposure light onto an original;

providing a light source that generates said exposure light and non-exposure light having a wavelength which is different from that of said exposure light and including at least one of ultraviolet light and visible light;

receiving said non-exposure light from said light source through at least a part of said optical system to obtain first information with respect to said optical system;

adjusting an optical property of said optical system based on said first information;

receiving said exposure light from said light source through at least a part of said optical system of which the optical property is adjusted to obtain second information with respect to said optical system; and

adjusting an optical property of said optical system based on said second information.

26. (Original) A method according to claim 25, wherein said optical system is a reflective optical system comprising a plurality of reflective optical elements assembled into a barrel.

27. (Canceled)

28. (Previously Presented) A method according to claim 26, wherein said exposure light has a wavelength in a range of 5 to 50 nanometers.

29. (Previously Presented) A method according to claim 1, wherein said exposure light comprises extreme ultraviolet light having a wavelength in a range of 5 to 50

nanometers, and said non-exposure light has a wavelength longer than that of said exposure light.

30. (Previously Presented) A method according to claim 29, wherein said optical property of said optical system is adjusted while an optical path therefor is kept in an atmosphere being substantially the same as atmospheric air.

31. (Previously Presented) A method according to claim 30, wherein said optical system includes a projection system which projects an image of said original illuminated with said exposure light by said illumination system on said object.

32. (Previously Presented) A method according to claim 1, further comprising:
adjusting the optical property of said optical system based on said obtained optical property at the wavelength of said exposure light.

33. (Previously Presented) A method according to claim 32, wherein said adjustment of said optical property by receiving said non-exposure light is performed under an atmosphere being different from an atmosphere under which said adjustment of said optical property by receiving said exposure light is performed.

34. (Previously Presented) A method according to claim 33, wherein said adjustment of said optical property by receiving said exposure light is performed while an optical path therefor is kept in a substantial vacuum.

35. (Previously Presented) A method according to claim 33, wherein said exposure light comprises extreme ultraviolet light having a wavelength in a range of 5 to 50 nanometers.

36. (Previously Presented) A method according to claim 1, wherein said optical property of said optical system is adjusted under an atmosphere being different from an atmosphere under which said object is exposed.

37. (Previously Presented) A method according to claim 36, wherein said object is exposed under an atmosphere being different from atmospheric air.

38. (Previously Presented) A method according to claim 36, wherein said optical property of said optical system is adjusted while an optical path therefor is kept in an atmosphere being different from a vacuum.

39. (Previously Presented) A method according to claim 36, wherein said exposure light comprises extreme ultraviolet light having a wavelength in a range of 5 to 50 nanometers.

40. (Previously Presented) An apparatus according to claim 12, wherein said optical system includes a projection system which projects an image of said original on said object.

41. (Previously Presented) An apparatus according to claim 40, wherein said exposure light comprises extreme ultraviolet light having a wavelength in a range of 5 to 50 nanometers, and said non-exposure light has a wavelength longer than that of said exposure light.

42. (Previously Presented) An apparatus according to claim 41, wherein said first sensor receives said non-exposure light while an optical path therefor is kept in an atmosphere being substantially the same as atmospheric air.

43. (Previously Presented) An apparatus according to claim 12, wherein said first sensor receives said non-exposure light under an atmosphere being different from atmosphere under which said object is exposed.

44. (Previously Presented) An apparatus according to claim 43, wherein said object is exposed while an optical path therefor is kept in an atmosphere being different from atmospheric air.

45. (Previously Presented) An apparatus according to claim 43, wherein said ~~photo-sensor~~first sensor receives said non-exposure light while an optical path therefor is kept in an atmosphere being different from a vacuum.

46. (Previously Presented) An apparatus according to claim 43, wherein said exposure light comprises extreme ultraviolet light having a wavelength in a range of 5 to 50 nanometers.

47. (Currently Amended) A method according to claim 23, wherein said x-ray source is adjusted based on an image of said x-ray source formed with said generated second wavelength light.

48. (Previously Presented) A method according to claim 23, wherein said x-ray source is a laser excitation plasma source that generates extreme ultraviolet light as said exposure light.

49. (Currently Amended) A method according to claim 24, wherein said x-ray source is a laser excitation plasma source that generates extreme ultraviolet light as said exposure light and is adjusted based on an image of said x-ray source formed with said generated second wavelength light.

50. (Previously Presented) A method according to claim 25, wherein said adjustment of said optical property by receiving said non-exposure light is performed under an atmosphere being different from an atmosphere under which said adjustment of said optical property by receiving said exposure light is performed.

51. (New) An exposure apparatus according to claim 18, further comprising a first stage which supports said object and moves relative to a beam of said exposure light, wherein said light source observation system includes an image measurement device which is disposed on said first stage and which photoelectrically detects an image of said x-ray source

formed with said second wavelength light which is generated by said x-ray source and which passes through said optical elements.

52. (New) An exposure apparatus according to claim 51, further comprising a second stage which supports a plate on which a predetermined pattern is formed and which exposes said object with exposure light based on a pattern of the plate supported on said second stage, wherein

said light source observation system is provided with a reflecting member which is disposed on said second stage and which reflects said second wavelength light emitted from said x-ray source, and

said image measurement device disposed on said first stage measures an image of said second wavelength light from said reflecting member disposed on said second stage which passes through said optical elements.

53. (New) A method according to claim 23, said exposure apparatus being provided with a first stage which supports said object and moving relative to a beam of said exposure light, wherein

said step of adjusting includes a detecting step of photoelectrically detecting an image of said x-ray source of said second wavelength light which is generated at said x-ray source and which passes through said optical elements using an image measurement device disposed on said first stage.

54. (New) A method according to claim 53, said exposure apparatus being provided with a second stage for supporting a plate on which a predetermined pattern is formed and exposing said object on said first stage with exposure light according to a pattern of a plate supported on said second stage, wherein

a light source observation system is provided with a reflecting member which is disposed on said second stage and which reflects said second wavelength light emitted from said x-ray source, and

said step of adjusting further comprises measuring an image of said second wavelength light of the reflecting member disposed on said second stage which passes through said optical elements using the image measurement device on said first stage.